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BIBLIOGRAPHY OF IN-HOUSE AND CONTRACT REPORTS
SUPPLEMENT 11 AND INDEX FOR 1978-1983(U) ARMY ENGINEER
TOPOGRAPHIC LABS FORT BELVOIR VA R P BARRON ET AL
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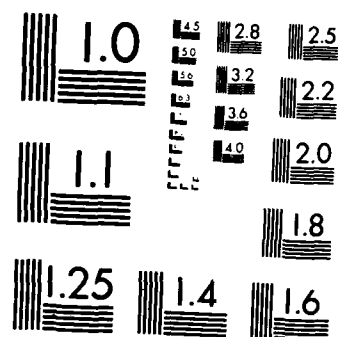
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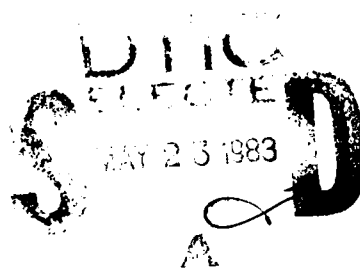
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Bibliography of in-house
and contract reports,
supplement 11 and
index for 1970 — 1983

Rosalinda P. Barrón

Margaret F. Fox

March 1983



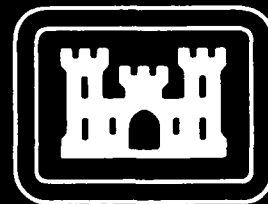
U.S. ARMY CORPS OF ENGINEERS
ENGINEER TOPOGRAPHIC LABORATORIES
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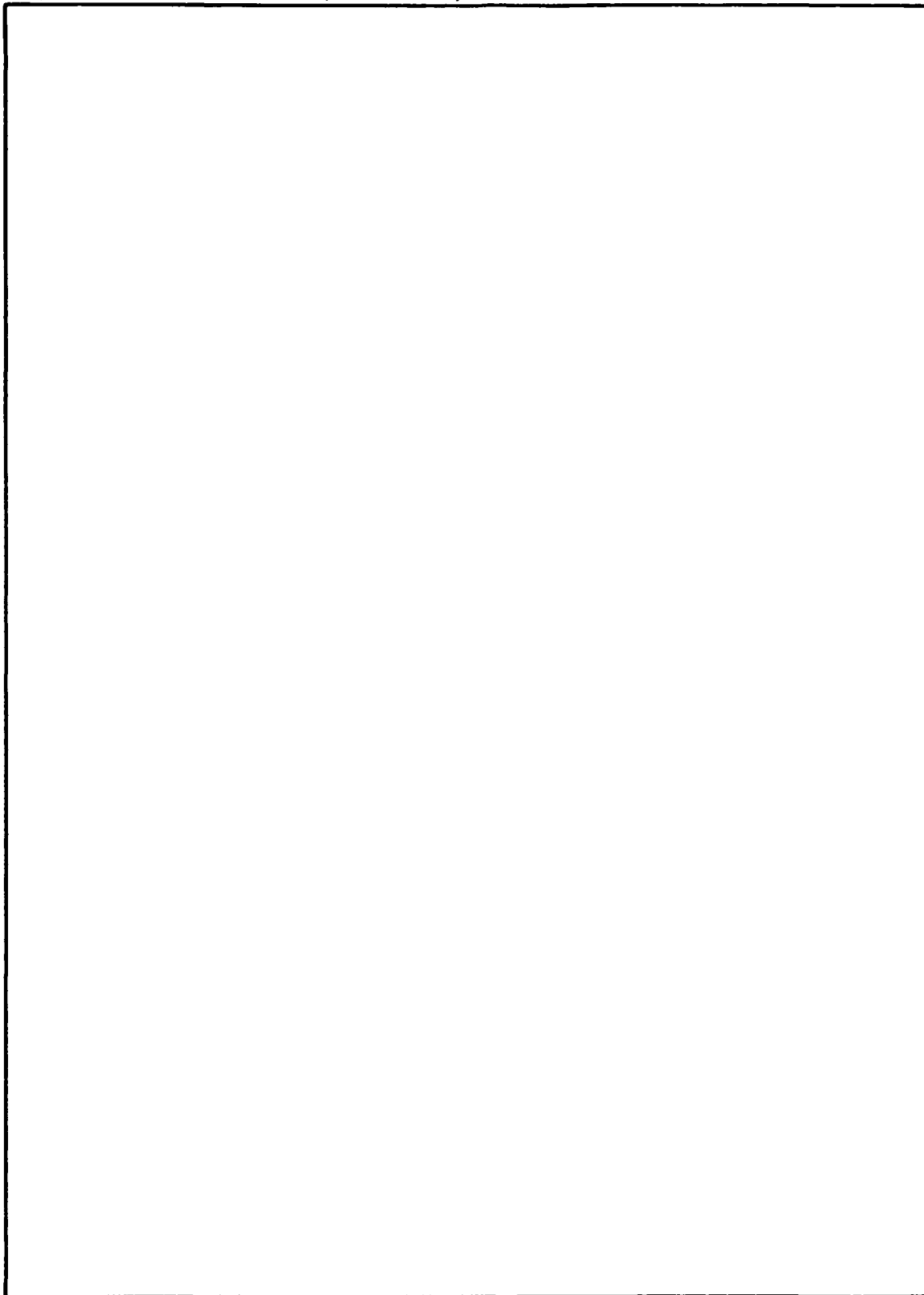
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PREFACE

This is Supplement 11 to the report titled "Bibliography of In-House and Contract Reports" (AD-877 653L). (Supplement 1, AD-890 066L). (Supplement 2, AD-905 548L). (Supplement 3, AD-B005 275L). (Supplement 4, AD-B010 6421). (Supplement 5, AD-B019 966L). (Supplement 6, AD-A055 468). (Supplement 7, AD-A068 744). (Supplement 8 AD-A084 111). (Supplement 9, AD-A099 803). (Supplement 10, AD-A113 006). It is a continuing bibliography of reports prepared by and for the U.S. Army Engineer Topographic Laboratories (USAETL), Fort Belvoir, VA. This bibliography includes reports that were published from 1 January 1981 through 31 December 1981.

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COL Edward K. Wintz, CE was Commander and Director, and Mr. Robert P. Macchia was Technical Director of the Engineer Topographic Laboratories during the report preparation.



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Huddle, J.R.
Brockstein, A.J.
Buchler, R.J.
Bose, S.C.

A STUDY TO OPTIMIZE PERFORMANCE OF
THE RAPID GEODETIC SURVEY
SYSTEM SECOND INTERIM REPORT
June 1981

Litton Guidance and Control System

DAAK70-80-C-0242

Keywords: Gravity Disturbance Vector Mapping, Inertial Instrument Stability Testing, Inertial Surveying, Simulation of Inertial Survey Systems, Two-Dimensional Smoothing.

The second interim study report summarizes work progress made on a study to optimize performance of the RGSS since the first interim study report (ETL-0252, Litton 404561) was written. The study is directed at determining that system configuration involving both hardware and software (on-line and off-line) and method of system utilization in a regional survey project which obtain certain performance goals. The near-term performance goals of 0.3 sec (RMS) for the vertical deflection and 0.5 milligal (RMS) for the gravity anomaly appear realizable by the existing equipment with installation of screened A1000 accelerometers in the level axes and utilization of screened G300G2 production gyros.

The ultimate performance goal of 0.1 sec (RMS) for the vertical deflection and 0.2 milligal (RMS) for the gravity anomaly also appears obtainable. Precise configuration of such a system requires quantification of the performance benefit of a Regional Adjustment Program (RAP) which combines the RGSS survey measurements from a number of survey traverses throughout a region. This work has not been performed to date.

This interim study discusses simulation results for the existing RGSS showing consistency with test results obtained by USAETL at the White Sands Missile Range (WSMR). Simulation results are also reported for RGSS utilizing A1000 accelerometers in the level axes and screened G300G2 production gyros for a multi-traverse survey in the Dry Lake Valley area. Further hardware test results characterizing RGSS error instabilities are also documented with recommendations for further system testing of possible design improvements. Finally results of optimal two-dimensional smoothing of the WSMR gravity anomaly data (0.6 milligal, RMS) are reported which indicate a significant improvement over that obtained by regional least squares (1.1 milligal, RMS).

ETL-0269

AD-A113 004

Crane, Robert K.

MINI RASTER-TO-VECTOR CONVERSION

September 1981

Environmental Research & Technology, Inc.

DAAK79-81-C-0025

Keywords: Contour, Raster, Topographic Map, Vector.

A raster-to-vector conversion program was developed for the Defense Mapping Agency (DMA). The program operates on run length coded data from a SCI-TEX scanner. It operates in a 16-bit Digital Equipment Corporation PDP 11/60 minicomputer with limited core storage, less than 64 k-bytes. The program was tested and timed using data supplied by DMA. It vectorized 4879.8 linear inches of contour data in 1.19 hours at 0.005 inch resolution and 1.14 hours at 0.010 inch resolution. The program also developed a number of attributes and contour intersection directories useful for automated editing of the vector data.

ETL-0274

AD-A116 769

Singleton, J. Robert
Chen, Pi-Fuay

**DETECTING LINE-ROAD AND
ROAD-INTERSECTION PATTERNS
AT VARIOUS ANGLES**

October 1981

Keywords: Cartographic Feature Extraction and Recognition, Solid State Sensor Array System, Walsh Transforms, Minimum Distance Classifier.

An extended Walsh transform technique for detecting and recognizing a set of cartographic features, such as linear roads and road intersections, at a variety of angles with the axes of the inspecting window is described.

The method was implemented as software for an existing sensor array minicomputer system, which consists of a solid state array to convert optical images into electronic signals, a minicomputer as signal processor, and a computer-controlled translational stage as the imagery holder.

Each angular orientation of the cartographic features is defined as a class of pattern and classified by using two minimum distance classifiers together with some pretesting algorithms. Typical experimental results are presented and conclusions are given.

ETL-0275

AD-A116 770

Baracat, William A.
Crombie, Michael A.

**APPLYING PHOTOGRAMMETRY TO
REAL TIME COLLECTION OF
DIGITAL IMAGE DATA
November 1981**

Keywords: Digital Image Data, Real Time Terrain Mapping, x-parallax, Epipolar Correlation, Supplementary Attitude Stabilization, y-parallax.

The practicality of converting digital and stereo image data into terrain elevation data in real time is investigated. Results indicated that the real time collection of elevation data using epipolar correlation methods is not feasible. It is shown that real time measurement of y-parallax can be used as a means to help maintain a desired relative orientation in a variety of digital collection system.

ETL-0277

AD-A114 815

Wescott, Thomas F.
Dallam, William C.
Peterson, Christopher J.

**INTERACTIVE DIGITAL IMAGE
PROCESSING FOR
DATA EXTRACTION PHASE 2
September 1981**

General Electric Company

DAAK-70-79-C-0153

Keywords: Digital Image, Image Processing, Information Extraction, Interactive Analysis, Terrain Analysis, Water Resources Data Element Extraction.

The Phase 2 of an experimental study has been performed to investigate the feasibility and use of man-machine interactive digital image processing techniques when applied to the extraction of terrain analysis data from aerial imagery. This phase of the study concentrated on applying techniques to extract water resources data elements and on the development and coding of software and algorithms. The developed software and algorithms pertained to filtering of themes and image scaling. Two digital processing techniques to "Skeltonize" features, best mapped as lines, were established and tested with limited success. Relative to water resources data elements, success was achieved in the extraction of alignment of watercourses and short line alignment of watercourses of water bodies. Partial success was achieved with the elements of delineation of wet areas and the identification of terminal points of watercourse segments. Image processing techniques for the extraction of areas subject to flooding and for the measurement of bank heights were not practical with the existing software.

The development/implementation of software, and the processing and analysis of imagery was conducted at the General Electric Digital Image Analysis Laboratory.

ETL-0279

AD-A119 258

Hevenor, Richard A.

**INVERSE SCATTERING APPLICATIONS
IN DETERMINING TERRAIN
FEATURE PARAMETERS**

December 1981

Keywords: Inverse Scattering, Radar, Terrain Features, Vegetation.

In this report, the results are described of an initial in-house research effort to investigate inverse scattering methods to determine terrain feature parameters. The problem of inverse scattering from discrete objects was considered, but was found not to apply to terrain feature extraction. Profile inversion concepts were analyzed, but were found to be only slightly relevant. Two specific inverse problems were analyzed and solved. The first problem involved solving for the dielectric constant of a slightly rough surface using the radar backscatter coefficients for two orthogonal polarizations. The second problem consisted of determining the dielectric constant and the conductivity of a medium located beneath a forest or jungle canopy. In this case, the electrical properties were calculated for two different polarizations of the incident wave.

ETL-0280

AD-A116 768

Crombie, Michael A.
Rand, Robert S.
Friend, Nancy J.

**AN ANALYSIS OF THE
MAX-MIN TEXTURE MEASURE
January 1982**

Keywords: Divergence, Image Texture, Maximum Likelihood, Principal Component, Relaxation Labeling.

The Max-Min texture measure was tested in an auto evaluation experiment and found to be an excellent signature for discriminating among several natural features and for isolating cultural detail from natural detail. This is especially true if the classification results are refined by a relaxation labeling exercise.

ETL-0281

AD-B954 313

Taylor, Eugene

**TESTS AND EVALUATION OF THE
NEAR REAL TIME EXPLOITATION SYSTEM**

January 1982

Keywords: Correlation, Image Analysis, Photo Interpretation, Photogrammetry, Point Positioning, Remotely Piloted Vehicle, UTM Coordinates, Video Imagery.

The Near Real Time (NRT) Exploitation System, consisting of an APPS-II with a cathode ray tube mounted to project video images of target areas into the optical system for correlation with aerial photographs, was tested. Based on the tests, video imagery, recorded from sensors mounted on aerial platforms, can be correlated with small scale photographic imagery if the video imagery includes features that can be identified and if the general location of the area is known.

ETL-0282

AD-A113 006

Barrón, Rosalinda P.
Fox, Margaret F.

**BIBLIOGRAPHY OF IN-HOUSE AND
CONTRACT REPORTS, SUPPLEMENT 10**

February 1982

This is Supplement 10 to the report titled "Bibliography of In-House and Contract Reports," (AD-877 653L), (Supplement 1, AD-890 066L), (Supplement 2, AD-905 548L), (Supplement 3, AD-B005 275L), (Supplement 4, AD-B010 642L), (Supplement 5, AD-B019 966L), (Supplement 6, AD-A055 468), (Supplement 7, AD-A068 744), (Supplement 8, AD-A084 111), (Supplement 9, AD-A099 803). It is a continuing bibliography of reports prepared by and for the U.S. Army Engineer Topographic Laboratories (USAETL), Fort Belvoir, Virginia. This bibliography includes reports published from 1 January 1981 through 31 December 1981.

ETL-0283

AD-A118-347

SYNTHESIS GUIDE FOR OBSTACLE SITING

Falls, Robert A.

(Report No. 9 in the ETL Series on Guides
for Army Terrain Analysts)

February 1982

Keywords: Barriers, Cross-Country Movement, Factor Analysis, Military Geographic Information, Obstacles, Vehicle Mobility.

This report provides step-by-step instructions for compiling an obstacle-siting map from previously prepared factor overlays with emphasis on aerial photography and maps for updating. The information on the factor overlays is combined, or synthesized, manually to produce an obstacle-siting map.

ETL-0284

AD-A123 817

Satterwhite, Melvin B.

Henley, Ponder

Treiber, Miklos

**VEGETATIVE COVER EFFECTS ON
SOIL SPECTRAL REFLECTANCE**

March 1982

Keywords: Ground Cover-Reflectance Relations, Soil, Soil and Vegetation Spectral Reflectance, *Vegetation, Visible and Infrared Reflectance.*

The reflectance characteristic in the 400 to 1100 nm region of two different soil types and the effect of varying vegetative cover on each are described. The spectral reflectance of the test sites was proportional to the cover and highly dependent on soil color. A cover of 24-35 percent was required to affect significantly the spectral reflection (400 to 1100 nm) of the background soil types. Equations for these relations are given.

ETL-0285

AD-A118 318

**TERRAIN ANALYSIS PROCEDURAL GUIDE
FOR DRAINAGE AND WATER RESOURCES**

Messmore, Jeffrey A.

**(Report No. 8 in the ETL Series on Guides
for Army Terrain Analysts)
April 1982**

Keywords: Aerial Photography, Drainage, Military Geographic Information, Remote Sensing, Terrain Analysis, Topography, Water Resources.

This document is one in a series of terrain analysis procedural guides being developed in support of the Topographic Support System (TSS). It was written specifically for the U.S. Army's Terrain Analysts and presents the methodology for extracting, reducing, and recording information for the drainage and water resources data field. This data field is divided into 3 subfields: (1) watercourses and water bodies, (2) drainage basins, and (3) ground water. Step-by-step procedures are provided for producing a factor overlay and supporting data tables for each of the drainage and water resources data fields.

ETL-0287

AD-A116 771

**A GENERAL CLIMATOLOGICAL GUIDE TO
DAILY FREEZING CONDITIONS: FROST DAYS,
ICE DAYS, AND FREEZE-THAW DAYS**

Wexler, Ruth L.

April 1982

Keywords: Daily Maximum Temperatures, Daily Minimum Temperatures, Diurnal Freeze-Thaw, Diurnal Temperature Range, Freeze-Thaw Cycles, Frost Days, Ice Days.

Climatological information concerning daily freezing conditions is of considerable interest to military and civilian communities because of the impact of such conditions on traffic mobility, personnel performance, and equipment function. In support of strategic planning, this report presents a series of maps showing the geographical distributions of the annual incidence of frost days, ice days, and freeze-thaw days, respectively, over an extensive area of the Northern Hemisphere (Europe and U.S.S.R.). In addition, a number of simple climatological guides are provided whereby the above parameters, if required, might be conveniently derived from ordinarily available data, either for a given area or a single station.

ETL-0288

AD-B070 386L

**TEST RESULTS OF THE LEAR SIEGLER,
SINGER, AND SPERRY GYRO
HEADING REFERENCE SYSTEMS
September 1982**

Perrin, Jack L.

Keywords: Heading Reference, Land Navigation, Vehicle Compass.

This report describes the test results of the Lear Siegler, Singer, and Sperry gyro heading reference systems. Each of the systems uses a different technical approach, using gyro technology in the 6.2 (exploratory) category of development. The purpose of the tests was to determine which of the systems has the potential of providing a heading of suitable accuracy for use in combat and combat support vehicles. Both laboratory and field tests were performed. Laboratory tests included gyrocompassing repeatability tests as a function of temperature, tilt, and initial heading; and heading drift tests as a function of temperature and tilt. Field tests were performed on various types of terrain with the systems mounted in an M113 Armored Personnel Carrier. In general, the three systems performed satisfactorily during laboratory testing, but the accuracy of the Lear Siegler and Singer systems deteriorated excessively during field testing. Only the Sperry system successfully demonstrated that it has the potential of maintaining an accuracy of 3° to 5° under field conditions for a 3-hour mission. All three systems need further development, particularly the Lear Siegler and Singer systems.

ETL-0289

AD-A119 260

**MINIATURIZED GYROCOMPASS
June 1982**

Britton, Harold G., Jr.

Keywords: Azimuth, Gyroscope, Gyrocompass, North-Finding.

This report summarizes the exploratory development efforts that were directed toward using gyro technology to define true north to an accuracy of 2 milliradians within 2 minutes of time. Several different approaches were explored. The report concludes that a device could be fabricated that would meet stated accuracy and response times.

ETL-0290

AD-A116 731

Chen, Pi-Fuay
Rohde, Frederick W.
Seemuller, William W.

**CLASSIFICATION OF CARTOGRAPHIC
FEATURES THROUGH WALSH TRANSFORMS**
April 1982

Keywords: Cartographic Feature Extraction and Recognition, Orthogonal Functions, Solid-State Sensor Arrays, Walsh Transforms.

An algorithm was used to classify and recognize a set of selected cartographic features, such as road intersections, straight-line roads, and rectangular objects, which were decomposed in the Walsh transform domain. The method was implemented digitally with an experimental system consisting of a solid state sensor array, a minicomputer as signal processor, and a computer-controlled translational stage as the image holder. Recognition examples for the set of cartographic features with respect to the window of inspection are presented. Nearly 90 percent recognition accuracy was obtained for the selected set of the cartographic features.

ETL-0291-1

AD-B070 705L

Baumgartner, Stephen L.
Capp, Douglas W.
Heller, Warren G.

**ASSESSMENT OF INERTIAL
TECHNOLOGY FOR GRAVITY
SURVEY APPLICATIONS**
May 1982

The Analytic Sciences Corporation

DAAK70-81-C-0142

Keywords: Deflections of the Vertical, Gravity Anomaly, Inertial Survey Systems, Moving-Base Gradiometer Surveys.

This document is a final report of a study to assess the accuracy potential of inertial survey systems and moving-base gradiometer systems by means of a covariance simulation. The simulation incorporates error models for those hardware error sources which significantly influence the recovery of vertical deflection and gravity anomaly. By finding the accuracy corresponding to a particular hardware configuration, the simulation results are utilized to assess the benefits of incorporating each type of hardware into an improved survey system.

ETL-0292

AD-A124 236

Satterwhite, Melvin B.

**VEGETATION AND TERRAIN EFFECTS
ON DIGITAL CLASSIFICATION OF
LANDSAT IMAGERY
December 1982**

Keywords: LANDSAT, Plant Community, Terrain, Vegetation.

LANDSAT scenes from the northern Chihuahuan Desert, south-central New Mexico and western Texas, taken in March and August 1975, were analyzed using conventional supervised digital image analysis techniques. The study objective was to evaluate the digitally classified LANDSAT image against known ground condition and determine those vegetative and terrain factors that could aid the manual interpretation of the classified image. The interpretation of the image and correct classification of most areas were greatly assisted by knowledge of plant community-landform relations, the species phenological and physiognomic characteristics, and the reflectance-cover relations for the soil and vegetation conditions in each scene.

ETL-0293

AD-B067 617L

Taylor, Eugene

**TEST AND EVALUATION OF
THE ANALYTICAL PHOTOGRAMMETRIC
POSITIONING SYSTEM, ADVANCED (APPS-II)
June 1982**

Keywords: Aerial Photography, Analytical Plotter, Photogrammetry, Point Positioning, Stereo Plotter, UTM Coordinates, X,Y Parallax.

Test results prove that the APPS-II meets the specified measuring accuracy of 10 micrometers and that it will automatically remove y parallax. The tests show that the APPS-II video monitor has not been developed to the level where it can be used to correlate reconnaissance imagery with data base photography.

ETL-0294

AD-A116 881

Wescott, Thomas F.
Dallam, William C.

**INTERACTIVE DIGITAL IMAGE
PROCESSING FOR TERRAIN DATA
EXTRACTION, PHASE 3
May 1982**

General Electric Company

DAAK70-79-C-0153

Keywords: Digital Image, Image Processing, Information Extraction, Interactive Analysis, Terrain Analysis, Water Resources Data Element Extraction.

The Phase 3 of an experimental study has been performed to test several man-machine interactive digital image processing techniques for the extraction of forest related information including the outline of forested areas, tree stem location, tree stem densities, and canopy closure. The techniques were applied to several different images covering a considerable range of forest types. Results of the digital processing were compared to a manual photo-interpretation and to actual field measurements.

ETL-0296

AD-A118 297

Brown, David R.
Fowler, Darrell V.
Frie, David J.
Hadly, William M.
Introne, Joan C.
Park, William T.
Robinson, Ann E.
Schubert, William

**R & D PLAN FOR ARMY APPLICATIONS
OF AI/ROBOTICS
April 1982**

SRI International

DAAK70-81-C-0250

Keywords: Artificial Intelligence, Research Management, Robots, Tactical Warfare.

One hundred applications of artificial-intelligence technology and robotics in Army combat and combat support that may be possible and worthwhile are identified. These possible applications have been divided into ten categories, and one example in each category has been examined in detail. Research and development plans have been developed showing the basic and applied research that would be needed to make the applications possible.

ETL-0297

AD-A119 259

Chen, Pi-Fuay

**A SENSING ARRAY SYSTEM WITH
IMAGE STATISTICS PROCESSING
May 1982**

Keywords: Cartographic Feature Extraction and Recognition, Classifiers, Image Histogram, Image Statistics, Image Texture, Recognition, Solid-State Sensor Arrays.

An image domain processing technique was implemented with a solid-state sensor array minicomputer system. The solid-state array converted the photographic images into electronic signals that were used by the minicomputer to evaluate image histogram and image texture. A computer-controlled translational stage served as the image holder. A 16-dimensional feature vector was computed for each input image based on the image histogram and image texture methods developed. Two types of classifiers, a sequential template-matching classifier and a minimum-distance classifier, were designed using only four components of the feature vector. Classification accuracy of better than 90 percent was obtained for both classifiers for a selected set of photographic imagery.

ETL-0298

AD-A119 257

Crombie, Michael A.
Shine, James A.

**AN ANALYSIS OF A RELAXATION SCHEME
TO IMPROVE TERRAIN ELEVATION DATA
July 1982**

Keywords: Digital Terrain Matrix, Elevation Correction, Relaxation, Stereo Correlation.

Elevation matrices derived from correlation of digital stereo images often contain errors resulting from a breakdown of the correlation process. One such matrix was corrected using a relaxation algorithm where each point was given a reliability based on comparison with its nearest and next-nearest neighbors. These reliabilities were then used to determine if and how much a point was to be corrected; the process was iterated. The algorithm removed small error areas, but large erroneous regions were not corrected, even when terrain slope classification information was considered.

ETL-0299

AD-123 802

Margerum, Eugene A.

**METHODS FOR CALCULATING ATMOSPHERIC
REFRACTION AND ITS PERTURBATION
August 1982**

Keywords: Astronomical Positioning, Astronomical Refraction, Atmospheric Optics, Geometrical Optics, Ray Tracing.

Equations for tracing rays through the atmosphere in spherical coordinates are developed including lateral refraction effects. The spherically symmetrical case is considered in greater detail and equations for the error in altitude angle are obtained. Perturbation analysis is also performed to obtain the deviations in the refraction error due to differences in some standard atmospheric profile and the actual atmospheric profile. In addition, numerical expressions for evaluating the integrals are given, and some simple standard atmospheric models are discussed.

ETL-0300

AD-A123 496

Crombie, Michael A.
Rand, Robert S.
Friend, Nancy J.

**SCENE CLASSIFICATION RESULTS
USING THE MAX-MIN TEXTURE MEASURE
July 1982**

Keywords: Confusion Matrices, Max-Min Texture, Maximum Likelihood Classification, Probabilistic Relaxation.

The practicality of using the Max-Min texture measure as a class signature followed by probabilistic relaxation is tested. The results indicate that a simpler texture signature should be developed and that rules need to be developed to verify classification results and to combine those results with data base entities and with other image functions.

ETL-0301

AD-A124 196

Samet, Hanan
Rosenfeld, Azriel

**APPLICATION OF HIERARCHICAL DATA
STRUCTURES TO GEOGRAPHICAL
INFORMATION SYSTEMS
July 1982**

Computer Vision Laboratory

DAAK70-81-C-0059

Keywords: Data Structures, Geographical Information Systems, Quadrees.

This document is the final report for an investigation of the application of hierarchical data structures to geographical information systems. The purposes of this investigation were twofold: (1) to construct a geographic information system based on the quadtree hierarchical data structure, and (2) to gather statistics to allow the evaluation of the usefulness of this approach to geographic information system organization.

ETL-0302

AD-A119 254

Davis, Dale M.
Downing, James A.
Zoraster, Steven

**ALGORITHMS FOR DIGITAL
TERRAIN DATA MODELING
March 1982**

ZYCOR, Inc.

DAAK70-80-C-0248

Keywords: Contour Generation, Contour Line Simplification, Digital Terrain Elevation Matrices, Grid Generation, Grid Resampling, Grid Smoothing.

Algorithms and test results are described for three different general operations used in computerized modeling and mapping. The algorithms are used for transforming strings of contour data into digital elevation models (DEM), transforming DEM's into a set of contour strings for display, and smoothing DEM's using several filtering and convolution techniques. The use of DEM smoothing operations for the simplification of contour lines is examined and two methods of controlling filter effects for this application are relatively small, and many of the same technology elements are required in many different applications.

ETL-0304

AD-A123 806

Rohde, Frederick W.
Hevenor, Richard A.
Simental, Edmundo

**MEASUREMENT TECHNIQUES OF
ELECTRICAL PARAMETERS OF SURFACE
MATERIALS IN THE X-BAND REGION
October 1982**

Keywords: Complex Electric Permittivity, Microwave Measurements, Plane Waves in Lossy Media, Radar Signatures, Surface Materials, TE_{10} Waves in Lossy Media.

Based on an in-depth study of the propagation of EM plane waves and TE_{10} waves in materials, the relationships between wave propagation parameters and the electrical parameters of the materials are established. Quantities that are related to wave propagation parameters and can be measured are defined. Potential measurement techniques are analyzed and evaluated. Two measurement techniques are identified as suitable for surface material measurements. A measurement system called Radar Parameter Instrumentation is described.

ETL-0305

AD-A123 474

Crombie, Michael A.
Friend, Nancy J.
Rand, Robert S.

**FEATURE COMPONENT REDUCTION
THROUGH DIVERGENCE ANALYSIS
October 1982**

Keywords: Ad Hoc Texture Measure, Classification, Divergence, Edge Texture Measure, Feature Component Reduction, Max-Min Texture Measure, Relaxation.

An approach to developing a reduced set of texture-like descriptors is presented. Results of several experiments using multi-component vectors are presented including experiments with relaxation techniques to cleanse the test images. In view of these results, the practicality of using more complex feature vectors is questioned.

ETL-0308

AD-A124 197

**RAPID GEODETIC SURVEY SYSTEM (RGSS)
DEFLECTION OF THE VERTICAL AND
GRAVITY ANOMALY TESTS AT WHITE SANDS
MISSILE RANGE, 1980
October 1982**

Todd, Mark

Keywords: Anomaly, Deflections, Densification, Gravity, Ground Vehicle, Helicopter, Inertial, Rapid Geodetic Survey System.

This report documents the tests and results obtained with the Rapid Geodetic Survey System (RGSS) at White Sands Missile Range in 1980. The performance capability of the system in the ground vehicle and helicopter modes is statistically characterized.

ETL-0310

AD-A123 889

**APPS-IV CIVIL WORKS DATA
EXTRACTION/DATA BASE APPLICATION
STUDY (PHASE I)
September 1982**

Howland, Jonathan C.

Autometric, Incorporated

DAAK70-81-C-0261

Keywords: Analytical Photogrammetry, Analytical Stereoplotter, Computer-Assisted Photo Interpretation, Damage-Potential Assessment, Digital Mapping, Flood Plains, Geographic Information System, Graphics Superposition, Land-Use Interpretation, Remote Sensing, Spatial Analysis, Structure Survey.

This report describes the Computer-Assisted Photo Interpretation Research (CAPIR) facility assembled at the U.S. Army Engineer Topographic Laboratories and discusses the implementation and applications of such a system in the Corps of Engineers' Civil Works Program. Following an exposition on the system, a demonstration project performed for the Detroit District by Autometric, Inc. is described. In this demonstration, the CAPIR system was applied to a flood-damage-potential study. The particular applications were structure mapping and land-use interpretation. A civil works "User Scenario" is also included in this report.

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Henley, Ponder. See Satterwhite, Melvin B.

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- Strife, Diane E.** See Caldwell, Douglas R.
- Thompson, Michael R. (ETL) and Socher, Robert M. (IIT Research Institute).** "Digital Terrain Analysis Station (DTAS)." *Fifth International Symposium on Computer-Assisted Cartography*, 22-28 August 1982, Crystal City, Virginia, AD-A119 298.
- Tindall, Thomas O.** "Evaluation of the Position and Azimuth Determining System's Potential for Higher Accuracy Survey." *1982 American Congress on Surveying and Mapping-American Society of Photogrammetry (ACSM-ASP) Convention*, 14-20 March 1982, Denver, Colorado, AD-A109 006.

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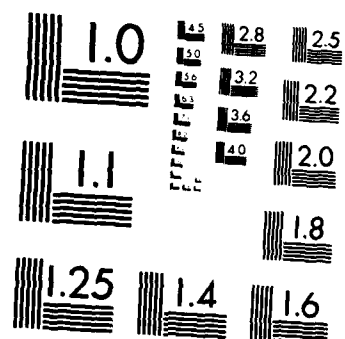
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